1941

Vindication of the unit general shop.

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HAYES 1941

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Problem Submitted for Degree of Master of Science

Massachusetts State College, Amherst

May, 1941

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Vindication of the Unit General Shop

A unit general shop is a program of shopwork in which only one phase of the shop work is taught to a group of students in a specified number of weeks. During this allotted time all emphasis is placed on acquainting the pupils with this branch of the shop program.

The aim of a unit general shop plan is to acquaint students in a given number of weeks with as much information as possible concerning a certain phase of some trade and to give them as much practical experience as possible in applying this information to some project of their own choice.

The number of different units to be taught during the school year depends entirely on the local shop set-up. The ideal number of units to be taught in one year is four. The units that are selected depends on the local or surrounding industrial trades. Units that may be rightfully taught in one section of the country must not necessarily be taught in another unless the industrial trend is the same.

Some of the most common shop units that are taught in a unit general shop are woodwork, printing, mechanical drawing, metal work, plastics, machine shop, cement work, carpentry, radio repairs, household repairs, welding, forge work.

Objectives

The objectives of a unit general shop are the development of:

A. Knowledge, skills, abilities

1. General knowledge of the manipulation of tools, including functions of machine tools as the maturity of the boy permits.
2. Knowledge of vocational opportunities.
3. Knowledge of conditions in manufacturing establishments and methods of commercial manufacture.
4. Knowledge of the training which a skilled craftsman requires.
5. Ability to think accurately under any condition.
6. Skill in using tools and machinery with speed, accuracy, and safety.
7. Skill in reading drawings and sketches intelligently.
8. Ability to solve problems.
9. Ability to measure value in furniture, houses, home repairs.
10. Skill in making repairs around the home.

B. Habits

1. Care in handling tools, materials, machines.
2. Worthy use of leisure time.
3. Accuracy.
4. Creating something worthwhile.
5. Good citizenship.
6. Aiding society.

C. Attitudes

1. Individuality.
2. Courtesy.
3. Tolerance.
4. Responsibility.
5. Cooperation.
6. Skill appreciation.
7. Interests in our natural resources.
8. Increased realization of self-esteem.
9. Exploration in the field of work.
10. Necessity of healthful working and living conditions.

Unit Shop Management

Each unit shop should be conducted as efficiently and humanely as possible. In order that the work may be as well done as possible in a unit shop, the instructor and pupils must have a clear understanding of the following points that do much for making an efficient, congenial shop condition:

1. Each unit of shopwork is one of exploratory nature.
2. Each boy has certain personal responsibilities.
3. The interest of the individual boy determines the project that he makes.
4. The only project that the instructor suggests for a boy is the first one in each 7th grade unit. If the instructor has seen evidence of a boy's work in a unit, it isn't mandatory for a boy to follow the teacher's suggestion.

5. Students must show sketch, drawing or a pattern of project he elects to work upon.
6. Bell rings five minutes before end of period. All boys are to stop work immediately, return tools, put away work clean up benches, and be ready to pass to next class at second bell.
7. Each boy is on his honor in the shop.
8. There may be as many as twenty different projects under construction at once in a class. Cooperation of each boy is necessary in order for the shop to be conducted efficiently.
9. Strict attention must be given to the instructions on tools and tool operations at the beginning of each period.
10. Individual instruction is given by the teacher to students as the occasion demands.
11. Each student is responsible for his own work.
12. Each project that is made must be of a useful nature. There is no cost to the students for projects.

Justification of the Unit General Shop in the Curriculum

The proper place for a unit general shop in the school curriculum is in Grades 7, 8, and 9, where the units are used as exploratory courses for boys. By using this shop set-up boys can find out by actual contact with shop work whether or not they wish to follow mechanical or other courses in Grades 10,11, and 12. Absolutely no attempt is made to put emphasis on any particular shop subject for

the boys by the instructor. All units are taught with same justification as the other units. Boys may favor one unit over another if they find themselves better adapted to a particular type. These three years are "proving grounds" for each boy. A boy finds he does not care for shopwork and thereby arranges his course of study in Grades 10, 11, and 12 to fit his needs. Other boys may find that they are capable of doing one or more phases of shopwork and wish to elect a certain vocational course in high school. Under a unit general shop plan, boys are given actual shopwork with the idea of finding out if they wish to follow a particular vocational shop in high school. The boy is not given a theory course. An attempt is made in these three grades to give boys the opportunity to put themselves in the "right groove" early in life so that they will meet a fair amount of success in a self-selected field.

The ideal plan for these exploratory shop courses under a unit general shop is to make shop courses compulsory for all boys in Grades 7 and 8. If a boy finds that he does not care to take shopwork in Grade 9, he is not forced to do so. This boy knows by actual contact with theory and practical work that he no longer wishes to spend time on shop subjects. By making shop subjects elective in Grade 9 all boys elect shop of their own volition. Boys then have made up their minds that they wish to follow shopwork on through high school or that they are still undecided as what line of study they wish to follow

in high school and therefore elect another year. At the end of Grade 9, a boy should know whether he wishes to elect shopwork in the vocational school, which is a part of every modern public educational system. For the boys who follow the vocational course in Grades 10, 11, and 12, the unit general shop in Grades 7, 8, and 9 is a preparatory school to them. To the boys who take shop in Grades 7 and 8 and possibly Grade 9 and then drop it, the unit general shop helps them to guide themselves into some course other than shopwork in the remaining grades.

The boys who find out that shop work is not adapted to their needs, now can concentrate their efforts on other courses of their choice without thinking that they never had a chance to find out whether they were fitted for shopwork or not.

The students who leave Grade 9 have the background of these four or five units of shopwork which were taught in Grades 7, 8, and 9 to guide them into the shop that they themselves wish to follow as a vocation. If these shop boys guide themselves by actual shop experiences into a life work that they are fitted for they will find their economic solution and most likely will go on through life as contented citizens. A unit general shop in Grades 7, 8, and 9 gives boys a chance to find success in a life of vocational endeavors.

Type of Unit General Shops

The facilities that are used to house a unit general shop are of two varieties:

1. A separate room for each shop subject and the necessary tools, equipment, machines installed in this room.
2. Combination Shops. A common combination of a unit general shop is a room that houses the equipment, tools, of woodworking and metal working or one which houses printing and mechanical drawing. In a combination shop, only one subject is taught in an allotted length of time. There is no cross-over or dovetailing of one subject to the other even though facilities for both subjects are taught in one room under one instructor.

The first variety of housing a unit general shop, listed above, is an ideal set-up. However, it is a more expensive method than the second because of the need of more room space in a building and more bench equipment. This type of layout is more appealing to the students and administrators but it is also more expensive to install than the second variety mentioned above.

The second variety of housing is just as effective as far as real teaching is concerned provided that there is sufficient space in a school building to install adequately this combination shop in a building. The same benches in this type of a shop are used for both subjects even though there is no dovetailing of subjects in a specified number of weeks.

Material Used By Students

The material that is used in the shops should be supplied by the school department. All necessary supplies are furnished the classical students in pursuit of their studies. In order to be consistent, the school authorities should offer the same inducement to mechanical minded students to aid them in accomplishing the aims of the unit general shop courses. We shouldn't allow the monetary factor to dampen the interests of mechanically minded students. If a school charges a shop boy, for the material he uses in furthering his ability, it may break the impetus of a mechanically inclined boy. This point about paying for material used, is one of the weak spots in many unit general shop programs in our schools. Our school shops should be on the same democratic basis as other school departments--self-realization for all, not for the few. Public schools are supposed to be conducted schools on a basis of equal opportunity for all, who show the desire to learn.

Marking System

The marking system that is used in a unit general shop is one based entirely on the individual boy's performance. A student is given a mark at the end of each quarter that is a symbol which represents the instructor's opinion of the boy's work during the quarter. Quarter marks speak only for the boy's ability in one particular unit in which he was given experiences in during

that quarter. Under the unit general shop system each boy starts anew to acquire a mark for each quarter. A mark in the first quarter has absolutely nothing to do with his mark given in the second quarter because the boy was taking work in an entirely separate unit of work.

There are no set standards for a boy to attain in any unit. To simplify this statement, it may be stated that in a woodworking unit, no project is set up as a model to work for as perfection. Each boy is treated as an individual and the mark he acquires is one that fits his particular ability.

It is the opinion of the writer that all boys may have different abilities. Marks are based entirely on a student's approach to his maximum ability. If a boy works and trys his best, he is given the top grade as that is the best that he is capable of humanly doing. He is rewarded for his individual attempts. There is absolutely no comparison between one boy and another in awarding marks. A boy who is gifted with ability and doesn't take advantage of this trait is marked accordingly even though he may show better work that a boy of less gifted human mechanical traits.

Marks are only the instructor's opinion of a boy's ability. Two instructors teaching the same unit to the same boy may give him the same or different marks, depending entirely upon the instructor's observation of the boy's ability, reliability, dependability. Marks should

be used as an incentive to encourage the boy to work to his maximum capacity.

Size of Class

Classes in unit general shops should be under twenty-eight for maximum effort on the part of the pupils and teacher. The smaller the class the more time an instructor can spend helping the individual boys. Also the smaller the class, the higher is the cost per pupil. Local school authorities usually decide whether the policy of their schools will be high pupil cost and better instruction or lower pupil cost and the best instruction that is possible with larger numbers.

Classes as high in numbers as forty can be handled by a teacher in a unit general shop provided he has the equipment to take care of them. However, in a situation like this, individual instruction is held to a minimum.

The instructor has time to help each boy and treat his individual differences in classes under twenty-eight. The boy, as an individual, is what we wish to develop in a unit general shop. The school committees should realize this point and limit unit shop teachers classes so that the boy may be greatly helped in his problems by the instructor.

Qualifications of a Unit General Shop Teacher

A unit general shop teacher should be a graduate of a four year college which trains men to teach boys the fundamental ideas of shopwork, for example, a school

like Fitchburg State Teachers College. He should major in one shop subject and minor in two other shop courses. This training should be backed up with a thorough cultural, educational, vocational, and guidance background.

A unit general shop teacher should also be equipped with a magnetic personality, necessary experience to fulfill a position adequately, good character, good health, and ability to see the point of view of others besides his above mentioned educational qualities.

After graduation, a shop teacher should equip himself further with courses that would enable him to understand boys better in order that he may bring the best out of each boy. For example, courses in psychology, teaching methods, curriculum building, trade methods should be of help to a shop teacher.

Boys are treated as individuals in a unit general shop. To be a successful unit shop teacher, a man must be a student of human nature. There is no casting of students in the same mold in a unit general shop. Each boy is given an opportunity of self-realization by a good unit general shop teacher. A unit shop teacher should realize that successful teaching in a unit shop is hard work. It is much harder than other types of shop teaching because of the ideas of developing the individual boy not the group.

Supervision of Unit General Shop Teachers

Supervision of unit general shop teachers should be

based entirely on the idea of helping the teacher to do a better job. We may class good supervision as a job of teaching the teacher. A supervisor cannot teach an instructor to do better work unless he is qualified to do his work well.

A successful supervisor in shop work must understand the teacher, know the teacher's disposition and ability, and have a constructive attitude toward the teacher's work. No teacher should be reprimanded in class by a supervisor. If a supervisor wishes to compliment, condemn, or make suggestions as to better teaching technique, a private conference should be arranged between the teacher and supervisor. Problems should be discussed and solved with a friendly and helpful attitude on the part of both the teacher and the supervisor. The aim of any such conference should be to improve the teaching technique in order to influence better pupil acquisition of shop learning.

Supervisors should hold all shop instructors to the same high degree of teaching technique. Better teaching methods will promote more complete and thorough learning. on the part of the students. The reason that both the supervisor and the teachers of shop work are employed is the boys. Unit general shops exist for the boys, not for the teachers or for the supervisors. Both the supervisor and teacher should work harmoniously toward the development of each boy as an individual.

Visual Education

All shops should be equipped to show silent and sound motion pictures of subjects that directly concern shop courses or are allied to a particular unit. Arrangements should be made so that the films can be shown in the shop. Proper installation of floor or wall-plugs for film showings are necessary in every shop visual education program. Light tight curtains should be installed on the windows to keep light out during the showing of films.

All modern school systems should have motion picture projectors for the use of the various schools. One of these projectors should be available for the shop instructor's use.

Each unit of the general shop should have a film library of at least twelve films. Arrangements should be made with cooperating industrial firms for use of their films. Such films are furnished schools free of charge or for a very small fee.

Visual education should be used by the shop teacher as an aid to better teaching in any unit general shop. To the pupils, a program of visual aids should be a welcome, instructive variation of shop work. Learning habits through observation of films should go far in aiding the boy in shop work. The actual industry, which relates to a particular unit may be brought to the boy through the liberal use of visual education. Boys should enjoy shop visual education in the shop atmosphere.

Safety

A safety program is carried on in each unit shop throughout the school year. Pupils are impressed at the beginning of the year with the necessity of being careful in the use of the shops and the shop equipment. In a shop, there are many possibilities for a boy to be injured. There is no reason for any student to be hurt provided everyone does his share in observing the simple rules of safety. The responsibility of impressing on the boys' minds the results of a good safety program in shops rests with the instructor.

Each shop is equipped with a well stocked first aid kit. This kit is completely stocked at all times during the year. The teacher takes care of all small cuts and scratches that boys receive. If a bad cut is received by a student first aid should be applied to the wound. The case then is referred to the school doctor or nurse immediately. If neither the school doctor or nurse is available, the pupil is taken to a doctor if necessary.

Safety rules of the shops are posted on the shop's bulletin board. Each machine has safety rules that apply to the operation of a machine pasted on or in front of the machine.

Permit cards to operate machines are required of all boys who elect shopwork. Legally these cards do not mean much, except that each parent who signs one of these permits realizes that he is giving his permission for

his boy to operate a machine. Requests from parents who do not wish boys to operate machines are rigidly observed.

The boys who are compelled to take shop work as part of their school curriculum are not allowed to operate machines. Usually shop work is required in the curriculum only in the 7th and 8th grades. Boys of this age are too young to operate machines. Grade 9, in which boys elect shop work, is the year in which they first should be allowed to operate machines.

All machines are carefully guarded. Zones are established around machines in order to keep other boys who do not operate machines out of contact with operators. Machines are individually operated with separate motors, switches. This is the safest condition in a school shop.

The machines are located in the shop so that there is no interference with safety of the boys working at the benches.

Students are encouraged to walk around a unit general shop slowly. Safety for each boy demands this of the group. There is a tendency among boys to hurry in a unit general shop because of personal interest to complete a project. One of the instructor's first jobs in conducting a unit general shop is to show all boys down to an even workable pace.

Guidance

A properly conducted unit general shop serves as a

self-guidance aid to students. Shop opportunities are presented to the boys of an exploratory nature that help the boys to adjust themselves to the groove in which they will function the best in Grades 7, 8, and 9, and also through remaining school years and on into life.

One of the greatest selling points that a unit general shop has is its pupil guidance opportunities. Exposure to the various units of shop work in the 7th and 8th grades develop by the end of the 8th grade into a mental reality to the individual boy that either he is mechanically inclined or not. If a boy elects shop work in Grade 9, further exposure to shop units enlarges the development of his mechanical picture and he thereby selects the vocational shop that he wishes to specialize in Grades 10, 11, and 12. By acquiring this specialization in the vocational school he hopes to find a vocation at which he can have a fair amount of success during his lifetime.

School systems which have the unit general shop set-up in Grades 7, 8, and 9 offer to boys a more concrete opportunity to guide themselves into the life groove in which they belong. This discovery is made before a boy is sixteen years of age. The boy finds the right groove for himself by actual contact with the units. He makes the decision as to whether or what mechanical vocation he wishes to specialize in by his own experiences with these established units. Interest for certain units

of shop work that he has been exposed to in the unit general shop furnishes the boy's initiative to acquire more knowledge in this unit by specializing in the unit in Grades 10, 11, and 12.

Economically a boy who makes his vocational choice in Grades 7, 8, and 9 is better off than a boy who is still floundering in the sea of turmoil at the end of Grade 12. The school has given him an opportunity to be a good happy citizen by offering him a mechanical vocation of his own selection. When a boy can select his own vocational equipment as early as Grades 7, 8, or 9 and can have, besides a diploma, a definite aim in high school to work for, the unit general shop is the answer in the school curriculum whether a boy should follow a mechanical course or not in Grades 10, 11, and 12. The unit general shop offers this inducement to boys who come under its influence.

Shop Equipment

The equipment of a unit general shop is modern, corresponding to what up-to-date trade establishments are using. A boy would be seriously handicapped in learning to work with obsolete equipment. Therefore, it is necessary to bring periodically the equipment up-to-date. Equipment doesn't need to be cast aside all at once. Different pieces of modern equipment are added as it seems advisable to do so. A unit general shop does not need to be of any more investment or up-keep than

other types of school shops that are used in school systems. A good grade of equipment is purchased for a unit general shop because of the fact that inexperienced boys are taught to use this equipment. A piece of equipment naturally should be expected to last longer where only skilled hands touch the parts that when unskilled boys are learning on equipment that is used in schools. The initial cost of a good piece may be higher than on a poor piece of equipment, but the life and upkeep of the more expensive article will be more economical at the end of a number of years.

A sufficient number of varieties of hand tools is available in each unit shop. An adequate supply of hand tools is determined by the size of the classes assigned to the shops. Numbers of students vary in different systems. Students cannot be given the proper experiences if they do not have the tools with which to work.

Machines are installed that will enable the instructor to give the boys the experiences necessary. Students are rotated on these machines, if necessary, so that all will be exposed to the results that can be accomplished with machines. Some units demand little equipment as far as machinery is concerned, while other units demand a variety of machines. Some machines call for quite an investment in money. Economy in operation calls for a long range program in adding and replacing machines periodically. School administrators are advised of this fact in order that steps may be taken to secure

new machines and to replace others in order to keep the unit shops efficient.

Bench space and vises are adequately provided for all units. The original investment in these two items is usually the only cost for at least 15 or 20 years, if material used in benches and vises is of good quality. Vises which are to be used should be adapted to the uses for which the units demand. Benches are of two types: the individual bench, and the group bench. One boy usually works on an individual bench. On the so-called group benches, a number of boys may work. In either of these types of benches, a vise should be provided for each boy. The writer leans toward the group bench as it teaches cooperation and ability to get along with other boys. These social advantages are considered in installing or replacing benches.

Shop Layout

In laying out a unit shop, bench equipment, machines, tool room, natural and artificial light, shop safety, shop space, size of classes, and storage facilities should be taken into serious consideration. Before laying out any unit shop the above considerations should be accurately thought out on paper. The layout should then be drawn up. Hence, if mistakes should be made they will be made on paper. This method of drawing the layout of a proposed shop, before installing equipment, usually saves time.

Sometimes new equipment is to be installed in the

present shop. Instructors should also draw up their present shop and make the proposed changes on the drawing to see if everything, as he proposes, would be workable. When satisfied of his layout drawing, he should then go about making the actual changes.

Tool Room

The tool room is an ideally located space in the shop where all hand tools, finishes, brushes, nails, brads, screws, machine parts are displayed for the use of boys as they need them in completing projects. The room should be large enough to comfortably display all items.

A boy is in charge of the tool room during all classes. Boys are rotated in turn to take charge of this room. It is the duty of the tool room boy to furnish all tools and materials as requested by other boys, to check all tools and materials in, to repair broken tools, to adjust tools when needed, to keep the room in a presentable condition, and to learn names of new tools by studying available tool catalogues. Boys in charge of the tool room, are made to feel that the manner in which the tool room is operated is a very important function in the successful operation of any unit general shop.

Tools and materials are given out to boys in the shop by the honor system which is a prominent principle employed in the operation of unit general shops. At the end of the school day, all tools and tool room materials

are locked up and ready for the next day's classes.

Tool room experience is of value to boys. Many boys follow a vocation as a clerk in industrial tool cages. Responsibility is a trait that is developed in successful boys in a tool room.

Organizing a Unit General Shop

A unit general shop is of most value to a public school program in Grades 7, 8, and 9, because in these years there seems to be an adjusting of the gap between small children and grown up boys and girls. Grades 7, 8, and 9, are the school years in which a student has to select a definite course to follow in Grades 10, 11, and 12. Most school systems try to adjust students to their proper courses by the use of exploratory courses in Grades 7, 8, and 9. Exposure to these exploratory courses gives the student a chance to sample for himself what may be expected of him if he is to follow such subjects in high school. The unit general shop is the method by which all boys explore shop work in Grades 7, 8, and for those boys who elect shop in Grade 9.

The organizing and workings of a unit general shop is the same regardless of locality. However, the units that are taught in a public school program are determined by local or surrounding industrial trends. After selecting units that have some local industrial flavor the number of units to be taught in a school year are determined. Four units are taught in one school year. Nine or ten weeks are allotted to each unit. In Grades 7, 8

the same units are taught. Grade eight's material on a unit is a continuation of Grade seven's information and experiences. Grade nine's units should be the same as in Grade 7 and 8 unless a vocational school or high school has different shops than those in which experiences have been given in Grades 7 and 8. In this case, it may be advisable to replace two of the units of Grades 7 and 8 with new units that correspond with shop courses in high school or vocational schools in the particular town involved. However, in most schools, the same four units are taught in Grades 7, 8 and 9 because of the fact that there is usually or should be a continuity of work from 7-12.

All boys in the 7th and 8th grades have shop work included as a regular part of their program of studies. Shop is an elective subject in Grade 9. Mechanically inclined boys are the only boys who elect shop in the 9th grade as more periods per week are required of all boys who do so. In Grades 7 and 8 only two periods of shop are allowed each week. The 9th grade boys take shop five periods a week in order to give them a more intensive training experience.

All projects, except the first in each unit in the 7th grade, are projects of the individuals selection. After the lesson, in which the whole class is expected to take part, the instructor spends his time with boys on their individual problems.

Number and Length of Shop Periods

Boys in the 7th and 8th grades have two hours of shop a week. Two hours a week is necessary in order that boys may have sufficient time to explore the units. These two hours of shop work may run consecutively or on separate days. The writer feels that after experimenting with shop periods of half hour, three quarter hour, hour and a half, that the proper length of shop periods should be one hour in order that boys can work to their maximum capacity while in shop. Since, a half hour period is too short a time for efficient work in a unit shop and a two hour period is usually too long for boys to stay in shop at one time unless the schedule of all classes calls for two hour periods.

The periods in a unit general shop should be divided as far as time is concerned as follows:

1. Roll Call	1 minute
2. Lesson	12 minutes
3. Work on Projects	41 minutes
4. Clean Up	5 minutes
5. Passing Time	1 minute

The time allotted for the class lesson and project work sometimes varies depending on the total time needed to put the class lesson across to the boys.

As shop is an elective in the 9th grade, boys are given five periods per week to specialize on the units as it is in this grade that boys make their selection as to what high school shop or vocational shop these

wish to major in upon leaving grade nine.

Selection of Projects

Regardless of units, all projects made in a unit general shop are of the individual boy's choice with the exception of the first project in each unit in Grade 7. The first project in Grade 7 is selected by the instructor for the boys to make. This project should be small, if possible, and one that calls for the use of several tools and tool operations. Guidance is given, by the instructor, to the individual boys in the selection of projects which are suitable to the abilities of the boys concerned.

In a unit general shop the aim is to develop indivual abilities of the boys by the method of exploration. All boys are not capable of the same skill in each tool operation. Encouragement should be given to the development of the skills for which boys show an aptitude. The most successful method to accomplish this result is to encourage boys to make a project they desire to construct. The interest of the boy will determine what projects he makes, because he will naturally select projects in which he will meet a fair amount of success.

Some educators may claim that a boy will develop only certain skills in tool operation if he is allowed to make his own choice of work. My answer to this line of thought is that all boys receive the same factual knowledge concerning tools and tool operation at the beginning of each class period. The degree of skill that the boy develops in these

tool operations depends more on his own desire to use these operations than on any other factor. In a unit general shop, we must always keep in mind that we are not attempting to develop all around tradesman. That is the job for the vocational school or high school shops. We are interested in giving exploratory experiences in these different units. By developing abilities that his interests steers him, a boy will find his preference to a particular unit. If a boy has skill in a few operations of a unit or a number of units, he may elect such a shop course in high school or vocational school. There, in the vocational school, he will be required to develop skill in all tool operations that are peculiar to a particular unit or trade.

The number of projects that a boy makes in any particular unit depends on his ability, initiative, and selection of project. Because boys are of different abilities, they are not required to complete any specified number of projects in a unit. If a boy is interested in making a project of his own choice, he will work as fast as his human machine will allow him, and will work as well as his capabilities permit.

Practically all projects that a boy makes in a unit general shop will be a prized possession for the rest of his life. All projects must be of practical use to himself or to his home before construction is permitted and each project must have the instructor's approval before the boy is allowed to take the project out of the shop.

In a unit general shop, all application of tool knowledge or tool operations must be on a project that he is constructing. There is absolutely no such a thing as practicing tool operations on a piece of shop material. This factor impresses on the boy that his time in shop is put to some constructive good.

A class of twenty-five boys may have as many different projects under construction at one time because each boy selects his own project. However, in a class of equal size, there may be only ten different projects being made at one time. This is due to the fact that some boys have the same interests as their neighbors. In this situation boys learn to cooperate and help each other construct these individual projects.

If machining is required in 7th and 8th grade projects, it is done by the instructor. With the exception of work that requires the use of the circular saw, ninth grade boys cut out their own material. The writer does not believe in the use of circular saws by boys until they reach grade 11.

Unit General Shop

The writer is a teacher in a unit general shop in the Junior High School in Greenfield, Massachusetts. This Junior High School is made up of Grades 7, 8, and 9, and the unit general shop has been in operation in this school for ten years. The total enrollment for 1941 for this school is 622 Of this number 291 are boys. All 7th and 8th grade boys are required to take shop as part of their curriculum

but shop is an elective in Grade 9.

The units taught in this school are mechanical drawing, printing, tin work, metal work, and woodwork.

The units which are taught in the 7th grade are woodwork, printing, tin work, mechanical drawing. The school year of forty weeks is divided into ten week units.

In the 8th grade, the same units are taught as in the 7th grade with the exception of tin work. Metal work is taught in the place of the tin unit. Each unit is taught for ten weeks.

The 9th grade units are woodwork, printing, mechanical drawing, metal work. The division of time allotted for these units is different than in the 7th and 8th grades. The printing unit is allotted twenty weeks. The woodworking unit consumes sixteen weeks. The metal unit uses up the remaining four weeks of the school year. Boys who wish to take mechanical drawing may do so for forty weeks or they may take two or three periods a week of drawing and the remaining periods of five in the above units; namely, woodwork, printing, metal. The reason for the above unit shop schedule is due to lack of needed shop space and schedule assignments of unit shop teachers.

The type of unit general shop is used in this Junior High School is the combination type. The combinations are; woodwork and metal, tin in one shop; mechanical drawing and printing in another shop. This type of shop is followed closely in the 7th and 8th grades with a slight diversion in the 9th grade. Mechanical drawing in the 8th grade is

taught in a separate room from the combination shops. One teacher takes care of all the woodwork, tin, and metal for the three grades. Another teacher takes the printing and drawing units for grades 7 and 8 and the 9th grade printing unit. The 9th grade mechanical drawing unit is taught by a third teacher. This particular unit general shop functions very efficiently which shows that unit general shops can be adapted to local situations.

The equipment used in these unit shops is very modern and well adapted to local conditions. Material used in the units is ample to meet all needs.

Students who elect shop in the 9th grade are guided into vocational shops in Grades 10, 11, and 12 that fit their desires and abilities. Selection of vocational shops is guided by pupils' choice pupil's ability and pupil's results in aptitude tests. All 9th grade shop boys are given aptitude tests before a decision is made by the counselor as to which shop he is assigned to.

The counselor assigns a boy to a vocational shop in June after consultation with the unit shop instructor on the boy's choice and ability; their consideration of the boy's probable success in a particular shop; and their consideration of the results of the aptitude tests. The boy's choice is usually honored provided the unit shop instructor agrees with the boy on probable success, aptitude test show favorably and the vocational shop is not already filled up. In case the vocational shop enrollment is filled, a second choice of shop by the boy follows

the same procedure as stated above. Before a boy is definitely assigned to a vocational shop, a consultation is held with the boy's parent or guardian concerning the boy's vocational assignment. With parental agreement the boy is assigned to the vocational shop. If the parent objects to the assigned shop, another one is assigned to the boy that is agreeable to parent, boy and unit shop instructor. This condition very seldom crops up in the unit general shop set-up in Greenfield.

The shops in the vocational school in Greenfield are printing, cabinet, metal and auto, and machine shop. The machine shop is classed as a trade shop. Boys from the unit general shop in the Junior High School have choice of four shops, one of which is a combination type shop.

In the unit general shop in Grades 7, 8, and 9 we have no facilities for giving boys experience in preparation for the machine shop. Lack of proper space for a small elementary machine shop prohibits a unit in machine in the Junior High. The selection of pupils to be assigned to the machine shop in Grades 10, 11, and 12 is based entirely on the unit shop teachers opinion of the boy's probable success in the machine shop. So far this method has worked out well as the placement record of the machine shop of 95% of its graduates indicates. However, we should have an elementary machine unit in the Junior High unit general shop so that we won't be assigning boys to the machine shop by opinion but rather by actual observation

of them at work in a machine shop.

The record of boys who have been assigned to vocational shops in Greenfield is used in this problem to prove that a unit general shop is the proper type of shop in which boys show that their mechanical experiences in Grades 7, 8, and 9 help them choose intelligently the proper shop course in Grades 10, 11, 12. This record shows the stability.in vocational shops of the boys who selected them in grade 9. The years studied in this record are from 1936 to 1941. This means that we have had four graduating classes from the vocational school in that time. Also shown in this report are the Sophomore and Junior classes of the year 1941. The vocational school is a three year school. I propose to show accurately the shop enrollment for each year, inter-shop transfers, transfers to other courses than vocational shops transfers from other school courses to vocational courses, student mortality in the vocational school.

In any report that is submitted on student stability in courses in Grades 10, 11, and 12 the frailty of human nature must be taken into consideration. Some boys change courses because of actual dislike of economic reasons beyond the school's control. An inter-exchange of shop pupils may be also due to dislike of shop or instructor. Then too we will have pupils changing shops because of the unit shop teacher's mistake of assigning him to a shop he does not care because his original choice was overcrowded. All boys

cannot take the same vocational shop because facilities are not adequate to take care of them.

Five charts follow which show the stability of the boys who entered the Greenfield Vocational and Trade School in the years 1936, 1937, 1938, 1939, 1940. These charts show very definitely that the stability of boys who entered shop the last three years is practically stationary, as a result of the unit general shop courses in grades 7, 8, and 9 with the exception of the boys who left school. The school records show that most of the boys who left school from shop courses went to work. There were three vocational shops in 1936, namely, printing, woodwork, machine and metal. In 1937, a unit trade shop was added in machine work and the three other shops, printing, auto and metal, and cabinet were put in the vocational type of school. This same set-up is still in vogue which seems to amply meet the vocational needs of Greenfield. The size of the classes in the trade and vocational shops are limited by state regulation. Hence, the number of boys who can be given shop training is about the same each year.

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Class Entering Shops In 1936

Grade	Macn. & Metal	Cabinet	Printing	
10	27	8	12	
11	19	14	10	
12	14	12	4	

Shop Enrollment September

Grade	Macn. & Metal	Cabinet	Printing	
10	1		1	
11				
12				

Inter Shop Tranfers Out Of

Grade	Macn. & Metal	Cabinet	Printing	
10		2		
11				
12				

Inter Shop Tranfers Into

Grade	Macn. & Metal	Cabinet	Printing	
10	1		1	
11	2	2	3	
12	1			

Shop Tranfers To Academic

Grade	Macn. & Metal	Cabinet	Printing	
10	3	5	6	
11	3	2	1	
12	1			

Academic Tranfers To Snop

Grade	Macn. & Metal	Cabinet	Printing	
10	8	1	6	
11	6	3	3	
12	1	1		

Shop Students Leaving

Vocational diplomas awarded in June, 1939

Class Entering Snops in 1937

Shop Enrollment September				
Grade	Machine	Cabinet	Printing	Metal & Auto
10	12	20	11	20
11	10	14	15	24
12	9	9	12	16

Inter Shop Transfers Out Of				
Grade	Machine	Cabinet	Printing	Metal & Auto
10	1	1	1	
11			1	
12		1		

Inter Shop Transfers Into				
Grade	Machine	Cabinet	Printing	Metal & Auto
10	1		1	1
11				1
12	1			

Shop Transfers To Academic				
Grade	Machine	Cabinet	Printing	Metal & Auto
10	1	4		
11		4	3	10
12		1		

Academic Transfers To Snop				
Grade	Machine	Cabinet	Printing	Metal & Auto
10		8	5	4
11			1	4
12				

Shop Students Leaving				
Grade	Machine	Cabinet	Printing	Metal & Auto
10	3	5		1
11	1	1		3
12	1		1	1

Vocational diplomas awarded in June, 1940 35

Unit Trade diplomas (machine) awarded in June, 1940 7

Class Entering Shops in 1938.

Grade	Shop Enrollment September				
	Machine	Cabinet	Printing	Metal & Auto	
10	14	12	8	14	
11	12	7	7	8	
12	15	6	7	6	

Grade	Inter Shop Transfers Out Of				
	Machine	Cabinet	Printing	Metal & Auto	
10	1				
11					
12			1		

Grade	Inter Shop Transfers Into				
	Machine	Cabinet	Printing	Metal & Auto	
10	1				
11					
12				1	

Grade	Shop Transfers To Academic				
	Machine	Cabinet	Printing	Metal & Auto	
10				3	
11					
12					

Grade	Academic Transfers To Shop				
	Machine	Cabinet	Printing	Metal & Auto	
10					
11	4				
12					

Grade	Shop Students Leaving				
	Machine	Cabinet	Printing	Metal & Auto	
10	3	4	1	3	
11	1	1		2	
12					

24 Vocational diplomas will be awarded in June, 1941.

7 Unit Trade diplomas will be awarded in June, 1941.

Class Entering Shops in 1939.

Shop Enrollment September				
Grade	Macnine	Cabinet	Printing	Metal & Auto
10	15	15	11	16
11	12	11	8	11
12	12	10	9	10

Inter Shop Transfers Out Of				
Grade	Macnine	Cabinet	Printing	Metal & Auto
10			1	1
11				
12				

Inter Shop Transfers Into				
Grade	Macnine	Cabinet	Printing	Metal & Auto
10			1	
11		1		
12				

Shop Transfers To Academic				
Grade	Macnine	Cabinet	Printing	Metal & Auto
10		1		2
11		2		
12				

Academic Transfers To Snop				
Grade	Macnine	Cabinet	Printing	Metal & Auto
10	1		1	
11		1		
12				

Shop Students Leaving				
Grade	Macnine	Cabinet	Printing	Metal & Auto
10	4	3	4	6
11	2	1	1	
12				

Class Entering Shops in 1940.

Grade	Machine	Cabinet	Printing	Metal & Auto
10	13	25	16	25
11	13	25	16	24
12				

Shop Enrollment September

Grade	Machine	Cabinet	Printing	Metal & Auto
10			1	1
11				
12				

Inter Shop Transfers Out Of

Grade	Machine	Cabinet	Printing	Metal & Auto
10			1	1
11				
12				

Inter Shop Transfers Into

Grade	Machine	Cabinet	Printing	Metal & Auto
10				1
11				
12				

Shop Students Leaving

Grade	Machine	Cabinet	Printing	Metal & Auto
10				
11				
12				

Academic Transfers To Shop

Grade	Machine	Cabinet	Printing	Metal & Auto
10				
11				
12				

Shop Transfers To Academic

Grade	Machine	Cabinet	Printing	Metal & Auto
10				
11				
12				

Acknowledgment

To Professor Welles, I am indebted for his valuable suggestions and assistance in making my work possible.

To Mrs. Gladys Nichols, a teacher in the Greenfield High School, Commercial Department, I am indebted for her cooperation in supervising the typing of this problem.

To Miss Vera Regali, a student in the Commercial Course of the Greenfield High School, I am indebted for her work in typing of this problem.

James D. Hayes

Approved by

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Graduate Committee

Date May 7 1941